

Work Order ID 144958

144958

Page 1

Thursday, April 28, 2016 7:33:24 AM

Item ID: D6104-011 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: 17-4 SS Roundbar 6.50"OD
 Start Date: 4/28/2016 Start Qty: 10.00 ***10*** Cust Item ID:
 Required Date: 5/12/2016 Req'd Qty: 10.00 ***10*** Customer:

Reference: **DAS**
13
 Approvals: Process Plan: **9-89** Date: APR 28 2016 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D6104	Rev B

100	PURCHASING	0.00				<u>10</u>	<u>APR 28 2016</u>	DAS 13 9-89
-----	------------	------	--	--	--	-----------	--------------------	--

100

Purchasing

Purchasing

Memo

Issue P/O: 32189 a)Description: S.S round billet b) Ø6.50" x 4.100" longc) Tolerance on all dimensions are +0.030"/-0.000"d) Material: 17-4PH Stainless steele) Min UTS = 170 KSI (38 HRc) Material certification required

110	Receive & Inspect for Damage & Mat'l Certs	0.00
-----	--	------

110

Packaging

Packaging

Memo

Ensure material certification is attached

120	QC6- Inspect dimensions to drawing	0.00
-----	------------------------------------	------

120

QC

Quality Control

Memo

Ensure Material certification comply to Dwg D6104

10x SP/6-05-05

<u>16</u>	<u>14</u>	DAS 14 9-89
-----------	-----------	--

16/05/06

Work Order ID 144958***144958***

Page 2

Thursday, April 28, 2016 7:33:24 AM

Item ID: D6104-011 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: 17-4 SS Roundbar 6.50"OD
Start Date: 4/28/2016 Start Qty: 10.00 ***10*** Cust Item ID:
Required Date: 5/12/2016 Req'd Qty: 10.00 ***10*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Identify as per dwg & Stock Location: <u>MAT043</u>	0.00				<u>10</u>	<u>0</u>		DAS 13 9-39
130									
Packaging	Memo	0.10							
Packaging	LOCATION: MAT043								16/05/06
140	QC21- Final Inspection - Work Order Release	0.00							
140									16/5/9
QC	Memo	1.00							
Quality Control									

MUS MAY 06 2016

Picklist Print

Thursday, April 28, 2016 7:33:22 AM

Page 1

Work Order ID: 144958

144958

Parent Item: D6104-011

D6104-011

Parent Item Name: 17-4 SS Roundbar 6.50"OD

Start Date: 4/28/2016

Required Date: 5/12/2016

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP A02.12.02New Issue KJ/RF

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D6104-011P

Purchased

No

110

Each

1.0000

1

10

D6104-011P

17-4 SS Roundbar 6.50"Od

**

10x 8p/6-05-05

Location

Loc Qty

Loc Code

MAT043

1

143414

1

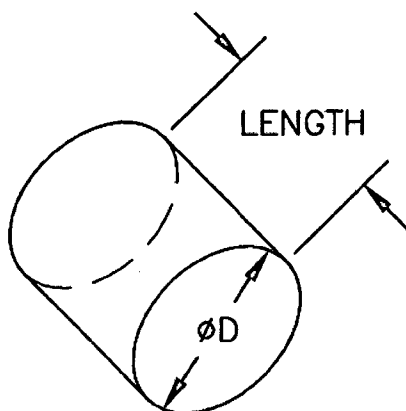


DESIGN RF	DRAWN BY 	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED 	APPROVED 	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29

SPECIFICATION CONTROL DRAWING



W10:144958

DAS
13
9-89

APR 28 2016

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRC)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

Copyright © 2001 by DART AEROSPACE LTD

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO32189

Purchase Order Date 4/28/2016

PO Print Date 4/28/2016

Page Number 2 of 3

Order From :
METAUX CASTLE
P.O. BOX 4090 STN A
TORONTO, ONTARIO M5W OE9
CANADA

VU-MET002

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone

Ship To Contact

Ship To Phone

Ship Via: Yours ppd

Ship Acct:

Buyer

Customer POID

Customer Tax #

Terms

Currency

FOB

Chantal Lavoie

10127-2607

Net 30

USD

Destination-Collect

Line Total: \$1,607.50

3 D6104-011P 17-4 SS Roundbar 6.50"Od 5/16/2016
Yes
5/16/2016

10.00
Each

\$115.00 \$1,150.00

AS PER DWG D6104 REV. B
B144958

MATERIAL: 17-4 PH SIZE: 6.50" X 4.100" LONG

8/16-05-05

Line Total: \$1,150.00

4 D6104-005P 17-4 SS Roundbar 4.00"Od 5/16/2016
Yes
5/16/2016

20.00
Each

\$54.20 \$1,084.00

AS PER DWG D6104 REV. B
B144957

MATERIAL: 17-4 PH AS PER AMS 4643 OR AISI 630
SIZE: 4.00" X 5.10" LONG

Line Total: \$1,084.00

Note:

4/28/2016

**Castle Metals®**

A. M. Castle & Co.

PACKING SLIP/
CERTIFICATE OF CONFORMANCE

Page 1 of 2

Shipment No:2963584

Ship From: A. M. CASTLE & CO. 2150 ARGENTIA ROAD MISSISSAUGA, ON L5N 2K7 CAN		Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		Deliver To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
Date Shipped 04-MAY-16	F.O.B. ORIGIN	Freight Terms Prepaid		Carrier MANITOULIN		BOL No 2963584-2	

Shipment Details	Final Destination Branch - TOR
-------------------------	---------------------------------------

Order No 4345038	Line No 1	Item No 15003:MO	Description 6.5000.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND A.120.0000-168.0000 CUT TO 4.1 IN (+ .2500/- .0000 IN) - BAND SAW CUTTING SPECIFICATIONS: AMS 5643 ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS EX:HEAT #'S Email P/s and certs to: clavoie@dartaero.com				
Purchase Order No 32189		Part Number YOUR ITEM NUMBER: D6104-011		Ordered Qty 10.00 PCS		Invoice Qty 10.00 PCS	
Details		ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS EX:HEAT #'S Email P/s and certs to: clavoie@dartaero.com END USER: DART AEROSPACE END USE: COMMERCIAL AIRCRAFT PARTS 8/16 05-05					
Delivery No. 120421003	Mill	Heat Number 	Mech Id	PCS 10	Width (IN)	Length (IN)	Shipped Qty(LBS) 400.4532

These commodities, technology or software were exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to US law prohibited.

Date Printed: 04-MAY-2016 05:46:00 PM



Castle Metals®

A. M. Castle & Co.

PACKING SLIP/
CERTIFICATE OF CONFORMANCE

Page 2 of 2

--	--	--	--	--	--	--	--

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Reviewed by Authorized Castle Metals Representative:

Date:

Name:

Chris Galt

MAY 04 2016



SP16-05-05

**VALBRUNA****SLATER STAINLESS, INC.**2400 TAYLOR STREET WEST - PO BOX 630
FORT WAYNE IN 46802 USA
PHONE 260.434.2800 - FAX 260.434.2801**Product Certification Report**Report Number: **5128410**

Certified on Apr 10, 2015 Page 1 of 2

Order I.D. 1500266 001		Order Date 2/04/15		Commodity Code	
Dim 1 6.5000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 266057	Customer I.D. 001809	Customer Purchase Order 27128
Product Shape Rounds			Product Surface HR & Rough Turned		Customer Grade 630
Length (Inches) 120.000 Min. 168.000 Max.			Bill of Lading # 424682	Weight	

Ship ToVALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1**Sold To**VALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1

DAS

14

9-89

1660506

Lifts: 0027

AISI 630

UNS S17400

ASMESA 564 13

Condition A

ASTMA 484-14a

AMS 2303F

3174-02 REV 39

ASTMA 564-13

AMS 5643T (except finish)

CHEMICAL ANALYSIS

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.041	.49	.025	.025	.41	15.73	4.33	.23	3.37	.03	.30	.000	.299

BRINELL (Type A device used)

HBW

350

TENSILE PROPERTIES ASTM E8-13a**CAPABILITY**

Cap HB	TS (PSI)	.2%YS (PSI)	%EL(4d)	%RA	AGE(F)
422	201000	177900	14.5	52.1	900

MAGNETIC PARTICLE TEST AMS2303

FREQ SEV

AVG .00 .00

MACRO ASTM E340-13/E381-01

MACRO

OK

OK

OK

PERCENT FERRITE (AMS 2315)

% FERRITE Etchant Magnification X

AVG .5 Marbles 100

Reduction ratio 5 To 1 Min.

Electric Furnace melted; AOD refined.

Ultrasonic tested to ASTM A388- Satisfactory.

Chemical testing to one or more of the listed ASTM methods:

E415-14, E1019-11, E1086-14.

Location of tensile fracture: inside middle of gage length.

Chemical Analysis performed at Acciaierie Valbruna, Italy.

No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes. Including Federal law Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

**VALBRUNA****SLATER STAINLESS, INC.**2400 TAYLOR STREET WEST - PO BOX 630
FORT WAYNE IN 46802 USA
PHONE 260.434.2800 - FAX 260.434.2801**Product Certification Report****Report Number: 5128410****Certified on Apr 10, 2015 Page 2 of 2**

Order I.D. 1500266 001		Order Date 2/04/15		Commodity Code		
Dim 1 6.5000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 266057	Customer I.D. 001809	Customer Purchase Order 27128	
Product Shape Rounds			Product Surface HR & Rough Turned		Customer Grade 630	
Length (Inches) 120.000 Min. 168.000 Max.			Bill of Lading # 424682	Weight		

**Ship
To****VALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1****Sold
To****VALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1**

Material conforms to listed specifications and is DFARS compliant.

Quality system is compliant with ISO 9001:2008. Produced in accordance with EN 10204 3.1.



Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes. Including Federal law Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

email: DHackett@valbruna.us

Dennis Hackett

MATERIAL RECEIPT INSPECTION FORM

MATERIAL DL6104-011
DATE 16/05/06

PO / BATCH NO 32189/144958

MATERIAL CERT REC'D yes
QUANTITY RECEIVED 10
QUANTITY INSPECTED 10
QUANTITY REJECTED _____

THICKNESS ORDERED 0.50 X 4.100
THICKNESS RECEIVED 0.60 X 4.250
SHEET SIZE ORDERED _____
SHEET SIZE RECEIVED _____

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	☒	☒	
CORRECT FINISH	☒	☒	
CORROSION	☒	☒	
CORRECT GRAIN DIRECTION	☒	☒	
CORRECT MATERIAL	☒	☒	
CORRECT THICKNESS	☒	☒	
PHOTO REQUIRED	☒	☒	
CORRECT MATERIAL	☒	☒	
CORRECT REF # TO LINK CERT	☒	☒	
CORRECT MATERIAL IDENTIFICATION	☒	☒	
CORRECT M# ON THE MATERIAL	☒	☒	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	☒	☒	
DOES THIS REQUIRE AN EXTRUSION REPORT	☒	☒	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK RECORD RESULTS BELOW				
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY <u>DAS</u>	SIGNED OFF BY _____		
DATE <u>16/05/06</u>	DATE _____		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

MATERIAL RECEIPT INSPECTION FORM

INSTRUCTIONS FOR INSPECTING BAR, TUBING, ROUND, & SHEET STOCK

1. VERIFY STOCK TO DART PURCHASE ORDER
2. MEASURE ALL DIMENSIONS FOR EACH PURCHASED STOCK
 - a. WIDTH, THICKNESS, DIAMETER, WALL THICKNESS & LENGTH
3. VERIFY CONDITION OF MATERIAL i.e. DAMAGED, CORRODED, etc
4. VERIFY THAT SUPPLIER HAS A NUMBER (HEAT #) ON ITS RECEIVING REPORT TO LINK TO MATERIAL CERTS
5. VERIFY MATERIAL CERTS ARE CORRECT TO THE DART PO INSTRUCTIONS
6. REMOVE / CUT A PIECE OF MATERIAL FOR SAMPLE HARDNESS TESTING

INSTRUCTIONS FOR INSPECTING SKIDTUBE & STEP EXTRUSION

1. VERIFY TO DART SUPPLIED DRAWING
 2. SAMPLE INSPECT MATERIAL IN BUNDLE TO ENSURE MATERIAL CAN BE RECEIVED INTO DART
 3. USING PORTABLE HARDNESS TESTER VERIFY HARDNESS OF THE MATERIAL TO THE DRAWING
 4. VERIFY THAT MATERIAL CERTS MATCH TO WHATS CALLED UP ON THE DART DRAWING
- AFTER MATERIAL PASSES INSPECTION**
5. HAVE DART EMPLOYEES START STOCKING MATERIAL BUT REQUEST MIN 20pcs FOR FULL INSPECTION
 6. INSPECT ALL DIMS AS PER DRAWING REQUIREMENTS

INSTRUCTIONS FOR INSPECTING CROSS TUBE MATERIAL

1. VERIFY MATERIAL CERTS MATCH THE REQUIREMENTS ON THE DART DRAWINGS
2. INSPECT MIN HALF THE BATCH OF EXTRUSION RECEIVED INTO DART
3. INSPECT MATERIAL AS PER THE EXTRUSION REPORT
 - a. WALL THICKNESS USING ULTRA-SONIC IN 4 LOCATIONS
 - b. OUTSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - c. INSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - d. STRAIGHTNESS @ CENTER OVER 12" SPAN
 - e. WALL THICKNESS USING TUBE MICROMETER HIGHEST/LOWEST BOTH ENDS
4. IDENTIFY EACH TUBE IN SEQUENCE OF INSPECTING (TUBE 1, TUBE2) AND W/O# AND PO#
5. RECORD ALL FINDINGS ON EXTRUSION REPORT

IF ANY QUESTIONS PLEASE SEE QC COORDINATOR BEFORE GOING FURTHER